IMPERIAL MYCOLOGICAL INSTITUTE
OCT 1947

DEPARTMENT OF AGRICULTURE AND LANDS.

SOUTHERN RHODESIA.

ANNUAL REPORT OF THE BRANCH OF BOTANY AND PLANT PATHOLOGY FOR THE YEAR ENDING DECEMBER, 31ST, 1946.

ANNUAL REPORT OF THE BRANCH OF BOTANY AND PLANT PATHOLOGY FOR THE YEAR ENDING DECEMBER, 31ST, 1946.

STAFF:

Mrs. Johnston replaced Miss M.K. Wilson, Technical Assistant, and Mrs. J. Thomas was appointed as Clerk-Typist on the resignation of Mrs. D.Z. Heelan.

The following leave was granted :-

Vacation leave - Miss Wilson, (30 days); Miss Sturgeon (10 days); Mrs. Pardy - (21 days); Dr. Wild - (14 days);
Sick leave - Miss Sturgeon (38 days); Mrs. Pardy (14 days).

The Senior Plant Pathologist was absent for three months whilst attending the Royal Society, Commonwealth Scientific and Imperial Agricultura Bureaux Review Conferences held in London during June, July and August, as a member of the Southern Rhodesia Government delegation.

MOVEMENTS:

145 visits were paid to farms in the following districts :-

Arcturus, Banket, Bulawayo, Enterprise, Featherstone, Headlands, Inyanga, Inyazura, Marandellas, Miami, Rusape, Salisbury, Sinoia, Theydon and Umtali, in connection with plant diseases, noxious weeds and poisonous plants.

In addition, visits were paid to Triangle Estates, tobacco warehouses, Pasture Research Stations at Marandellas and Matopos, and Forestry Reserve, Stapleford. The Botanist visited the National Herbarium and Department of Agriculture, Pretoria.

Inspections were made of plant importations and gardens for introduced diseases, chiefly those due to the spotted wilt virus (tobacco kromnek).

MEETINGS, LECTURES, ETC.:

Three farmers' association meetings were attended and a series of lectures delivered at ex-servicemen's and soil conservation officers' agricultural courses.

PLANT PATHOLOGY.

LABORATORY.

454 specimens were received from which 27 diseases were newly recorded in the Colony. The following were the most important :-

/Bacterial.....

Bacterial wilt of tobacco, tomato and potato (Xanthomonas solanacearum (Smith) Dowson); silvery scurf of potato (Spondylocladium atrovirens Harz.), smut of sugar cane (Ustilago scitaminea Syd.); rind disease of sugar cane (Pleocyta sacchari (Massee) Petr. & Syd.); stem rot of sugar cane (Nigrospora oryzae (B. & B.) Petch); wilt of peas (Pythium sp.); leaf rot of Streptocarpus Eylesii S. Moore. (Phytophthora parasitica Dast.); downy mildew of Pennisetum spicatum (Sclerospora graminicola (Sacc.) Schroet.); foot rot of Gilia (Sclerotium rolfsii Sacc.) leaf spot of Mexican Apple, Casimiroa edulis Llav. & Lex., (Alternaria sp.); stem rot of asparagus (Pythium ultimum Trow.); leaf spot of rose (Cercospora sp.) crown rot of Encephalartos lehmanii Lehm. (Associated with Fusarium sp.) diaback of cassava (Diplodia natalensis Pole Evans); cob rot of maize (Cephalosporium acremonium Corda); damping-off of globe artichoke; (pythium ultimum Trow.); fruit rots of grape fruit (Phomopsis citri Fawcett and Fusarium sp.); fruit rot of strawberry (Aspergillus niger van Tiegh.); leaf spot of Frangipani, Plumieria acutifolia Poir, (Ascochyta? plumieria P. Henn.); and die-back of apple, leaf rot of Stapelia and Huernia, leaf spot of pelargonium and mopane Copaifera mopane due to fungi not specifically determined.

In addition the following fungi were isolated from different sources most of which are new records for the Colony :- Xylobotryum coralloides Syd. from mine Timbers; Acremoniella atra Sacc. from wilted tobacco seedlings; Trichoderma viride Pers. ex Fries., Paecilomyces varioti Bain., Aspergillus niger van Tiegh. and Syncephalastru sp., associated with barn rot of tobacco; Paecilomyces varioti Bain, from Encephalartos lehmanii Lehm; Epicoccum purpurascens Ehrenb., from maize grain, Stachybotrys subsimplex Cooke and Chaetomium globosum Kunze as contaminants of globe artichoke seeds.

The most important record of the year was bacterial wilt of tobacco, potatoes and tomatoes due to Xanthomonas solanacearum. The organism was isolated and fully tested by cross-inoculation; its indentity was confirmed by Dr. W. J. Dowson, of Cambridge University. It is possible that more than one strain of the pathogen is concerned and inoculation tests are continuing.

Whether it is the same strain of bacterium that causes Granville wilt of tobacco in America is not yet certain, but as a precautionary measure seed of tobacco resistant to the disease was obtained and is being grown on the affected farms for trial and bulking up. Local investigation have discovered that the "Kaffir Spinach", Amaranthus graecicans Linn., which is so common on sand veld lands, is an alternative host of the bacterium and inoculation trials have shown sunn hemp to be susceptible under experimental conditions. This disease is not common in tobacco but is prevalent in potatoes and tomatoes.

Dr. Bates has devoted much attention to the outbreak of sugar-cane smut on Triangle Estates. A survey of the conditions has been made and control measures recommended. These include the elimination of the susceptible variety C.O. 301.

/The.....

The bacterial blight of Zinnia reported last year has been confirmed by Dr. Dowson as probably an undescribed disease.

Powdery mildews of a wide variety of plants have been unusually prevalent and severe field infection of potatoes was reported for the first time. Laboratory tests indicate that the casual fungus, Erysiphe cichoraceaarum, is transmissible to tobacco on which, however, it has only produced a mild form of "white mould" under glasshouse conditions. Further cross-inoculation experiments are proceeding.

A number of turf diseases were again received and it is evident that more attention to these troubles is being paid by golf and bowling clubs as well as private householders. Control measures which have been put into practice have been successful.

The Mycosphaerella reported last year, which Dr. Bates has shown to be the cause of black rot of pawpaw fruits in the Colony, has been examined at the Imperial Institute of Mycology and confirmed as being an undescribed perithecial stage.

Germination tests were again carried out for the Seed Maize Association and the amount of fungal infection was on the whole greater than in the previous few years. This may be accounted for by the increasing number of new growers who are joining the Association. Not one case of infection by Diplodia zeae was observed, although this fungus was fairly common on cobs and stalk in the lands. Gibberella saubinettii was the fungus most commonly found on germinating grain.

A good number of specimens of sunn hemp were received allegedly affected by Fusarium wilt. Although in many cases species of Fusarium were present on the roots, in no instance was F. vasinfectum found. Most of the injury was found, in consultation with the Branch of Entomology, to be due to larvae of the sunn hemp beetles, Exora spp.

C R O P S.

TOBACCO:

The general level of diseases throughout the crop was not unusually high, the most common being brown spot (Alternaria longipes), wild-fire (Pseudomonas tabaci), angular spot (Pseudomonas angulatum) and barn rot (Rhizopus arrhizus). Where late planting due to poor rains caused congestion in the barns at harvest time and leaf was allowed to become over-ripe on the plants, crops were severely damaged by Alternaria leaf spot and the barn spotting stage of frog-eye (Cercospora nicotianae). Although only a few samples of leaf affected by barn rot were received, yet this disease was responsible for much loss in the crop as a whole. Evidence was received from several growers that modification of barn and

/flue.....

flue construction to induce improved convection and aeration during curing, markedly reduced the incidence of barn rot as judged by unaltered control barns.

Better control of brown spot, due to Alternaria longipes, was obtained by many growers following publicity during the past year. The results obtained from field experiments carried out on the farm of Mr. A. Young at Sinoia, have indicated the importance of balanced nutrition and tobacco fertilisers with little or no nitrogen have yielded leaf of improved quality and resistance to Alternaria on heavier types of schist soils. Spraying in the field with copper fungicides also gave encouraging results in the trials and a number of the 1946/47 crops have been sprayed by Messrs. Pest Control (C.A.) Ltd., in an extended test.

Two outbreaks of what appeared to be Granville wilt of tobacco occurred on adjacent farms near Headlands on one of which the disease was observed nine years ago but its identity was not then confirmed. Both infected lands were in native areas, which have not been occupied for many years and were also infested by eel-worm. The discovery that the common "Kaffir Spinach", which is prevalent in old sand veld lands, is an alternat host of the bacterium suggests that the disease may have survived from the days of native cultivation.

An increasingly large number of diseases of Turkish tobacco are being recorded as the cultivation of this crop expands. During the year the following were recorded :- frog-eye, (Cercospora nicotianae); brown spot (Alternaria longipes) mildew (Erysiphe cichoraceaarum); damping-off (Pythium aphanidermatum); angular spot (Ps. angulatum); rosette virus and frenching.

POTATOES:

No report was received of the recurrence of Irish Blight (Phytophthora infestans) although the previously infected farms were kept under close observation.

Early blight, the incidence of which has increased much in recent years in certain areas where potato cultivation has been intensified, was completely controlled by copper fungicides. The success obtained by the spraying contractors resulted in orders being placed for the treatment of about 1,000 acres. These measures have been advocated by this Branch for many years, but spraying has never been adopted generally by growers owing to the high cost of equipment and inconvenience of operation at a time of year when all available labour is required for other farm work.

A number of cases of bacterial wilt have been shown to be due to the cosmopolitan Xanthomonas solanacearum. This disease has been suspected for a long time, but until recently staff has not been available for full investigations.

The first recorded outbreak of powdery mildew in field potatoes occurred during the year. Two crops were severely affected and the

disease was present in other farms. Generally, infection occurred after the plants had flowered so that the effect on yield was slight, but the potential danger of the disease was demonstrated where the fungus appeared early.

Erratic seasonal conditions have been responsible for a number of physiological tuber diseases and in some cases of failure to produce tubers.

MAIZE:

Owing to the generally dry sowing conditions fungus diseases were not prevalent, but despite this the amount of infection in seed for the 1946/47 crop was higher than last year. The young 1945/46 crop was characterised by the appearance of many stunted plants entirely deficient in chlorophyll. This type of chlorosis is frequently associated with drought conditions in the early stages of growth. As the plants become green after rains have fallen, the trouble is presumably nutritional. Affected plants, however, rarely recover completely and are often barren. Susceptibility to this type of chlorosis appears to be hereditary because several strains of inbred maize exhibited the character uniformly.

SUGAR CANE:

An outbreak of smut due to Ustilago scitaminea occurred on Triangle Estates and was widespread in the C.O. 301 variety when first reported. Investigations showed that this variety is very susceptible in Southern Rhodesia, and infection of the recently cut cane is probably facilitated by irrigation water. The varieties C.O. 281 and 290 showed considerable resistance to smut and so far no infection has been observed in P.O.J. 2725 variety.

Recommendations for control have been made, including the complete eradication as soon as possible of the C.O. 301 variety.

No other serious disease has been observed.

FRUIT, FLOWERS AND VEGETABLES:

Tomatoes were severely affected by blossom-end rot during the long spells of hot, dry weather experienced during the year. Much of the crop could be saved if better methods of watering were employed and mulching of the soil practised at these times.

Buck-eye rot (Phytophthora parasitica) was prevalent during wet weather.

Bacterial wilt (Xanthomonas solanacearum) was reported from the Umtali district.

Peach mildew continues to spread to new districts. It was reported from the Inyanga area but has not yet been observed on Rhodes Estate. Good control by lime-sulphur sprays was reported from the

/Sub-Tropical.....

Sub-Tropical Experimental Station, Umtali, by the Horticulturist and further reports of success were received from growers. In some cases a strong dormant spray (1 - 15) was sufficient to give complete control.

A severe outbreak of gummosis (Phytophthora citrophthora) in a Marsh grape fruit orchard was attributed to deep planting and faulty irrigation. Treatment of affected trees by scraping and Bordeaux paste and the correction of cultural faults led to rapid improvement.

Concentric ring blotch and mottle leaf due to zinc deficiency were again prevalent in citrus. The latter was corrected by zinc sulphate spray.

Powdery mildews were common on many flowers, probably as a result of dry seasonal conditions. Most of these are controllable by dusting with sulphur, but few growers adopt this practice except with roses.

A large number of cases of foot-rot diseases due to Pythium occurred, P. Ultimum Trow. being predominant. Antirrhinum rust was less prevalent than usual and few reports were received of the common foot-rot.

The new bacterial blight of Zinnias was again observed during long periods of wet weather. There is evidence to suggest that the disease is seed-borne.

TURF:

Satisfactory control was obtained of brown patch on golf greens (associated with the fungi Helminthosporium sativum, Rhizoctonia solani and Fusarium spp.), by the use of copper fungicides.

PLANT INSPECTION:

There was considerable wastage in seed potatoes exported from Great Britain by the Ministry of Food. A good deal of the injury could be attributed to exposure of the cases to sunlight owing to erratic shipping and rail facilities, but much of it was apparently due to collapse of the cases in transit. No serious disease was detected in the rotted tubers.

Several consignments of sweet-corn and tomato seed were intercepted by the Chief Plant Inspector because they were unaccompanied by certificates of freedom from Stewart's disease and canker respectively, as required by the Plant Importation regulations.

There was a renewal of imports of seed potatoes and tubers and bulbs of ornamentals from Europe, particularly from Holland, necessitating the imposition of quarantine restrictions.

Inspections were made of dahlias grown commercially, but no case of "kromnek" disease was observed. Dahlia mosiac is, however, very widespread.

/FUNGICIDES,.....

FUNGICIDES:

The supply of copper fungicides has improved greatly and organic mercurial dusts are readily available. "Spergon" has now been marketed in the Colony.

The firm, Pest Control (C.A.) Ltd., registered during the year and commenced large scale spraying operations with modern mechanised equipment. The firm is working in close co-operation with this Branch and frequent consultations are held with professional officers. Already marked success has been obtained in controlling potato diseases but the severe drought has masked the effect of fungicides on tobacco diseases.

R E S E A R C H.

TOBACCO:

Barn Rot.

Considerable time was spent by Dr. Bates and Mrs. Pardy in the study of fungi associated with barn rot. The fungus Rhizopus arrhizus was obtained from a number of sources and grown in pure culture for comparison. Cultures of Rhizopus species were collected from various kinds of rotting organic matter such as stewed and fresh edible fruits, milk puddings, cheese, germinating seeds and so on for comparison with the tobacco fungus. With the exception of one from stewed prunes, which was identified as R. nigicans, all appeared to be identical with R. arrhizus from tobacco. This provides further evidence to suggest that barn rot is essentially a physiological disease of the curing leaf and that the fungus is secondary to autolytic cell breakdown. The problem of the actual cause of the disease is of considerable importance to the tobacco industry and deserves more specialised attention than can be given by this Branch.

BACTERIAL WILT:

The occurrence of what is presumably Granville Wilt of tobacco has been investigated in some detail regarding the identity of the organism and its host range, as reported under "Laboratory" above. As strains of Xanthomonas solancearum exist, some more virulent than others, whose host ranges vary, the isolates from tobacco have been compared with those from potato and tomato by means of cross-inoculation. The tobacco and tomato organisms both gave positive results with Bonanza tobacco, but subsequent trials have given erratic results, possibly due to ageing of the bacteria in artificial culture. The potato isolate has produced a wilt by stem inoculation into sunn hemp (Crotalaria juncea) but this does not necessarily mean that sunn hemp can be infected naturally from the soil. Further tests are required.

The common weed, Amaranthus graezicans Linn., was found to be naturally infested with the bacterium in the lands growing the diseased tobacco, but no other alternate host has been detected.

/Seed.....

Seed of tobacco resistant to Granville wilt in the U.S.A. has been sown in seed beds for trial in the infected areas and arrangements have been made for a number of plants to be grown under careful supervisio to increase the seed supply for more extended trials next season.

Laboratory work to establish whether several strains of the bacterium with varied host range exist or whether the one strain can infect all hosts is being continued.

BROWN SPOT (ALTERNARIA).

Numerous isolations were made of A. longipes from brown spot in various parts of the Colony for comparison of growth rates, spore forma tion and other characteristics which might be correlated with varying severity of the disease. Slight variations only were noted in the variou isolates which may be accounted for by the known variability of species of Alternaria.

Field trials embodying a number of control measures were continu by Mr. A. Young, at Dundrennan, Sinoia. Spraying and dusting of the crop were superimposed on fertilizer and cultural treatments on first and secon year land. The results may be summarised as follows :-

1. Spraying with copper oxychloride provided a good measure of cont and was superior to dusting with copper-lime.

2. Alternaria spot developed earliest on plants with low fertilizer treatment, on a level with that generally in use in the district

3. The least development of brown spot was in plots receiving a mixture of murriate of potash and superphosphate only at a rate of 400-lbs. per acre.

The cured leaf from these plots was superior in "quality" to tha from other plots where more disease occurred.

4. Potato fertiliser (13 : 3 : 8) plus muriate of potash at 200-lbs per acres induced no improvement in quality or reduction in the amount of disease.

5. Irrespective of fertiliser treatment the amount of disease in second year land was distinctly more than in first year land.

Two important conclusions can be drawn, namely that the incidenc of brown spot is closely correlated with commercial quality of the leaf and that spraying in the field may provide a useful measure of control.

In these trials only one variety of tobacco, Willow Leaf, was grown. Further investigations with varieties of tobacco more suited to heavy soils might yield more valuable results.

/FIELD SPRAYING:.....

FIELD SPRAYING:

As a result of experiments carried out in the past on field spraying for the control of leaf diseases, a scheme has been drawn up by the Government and Rhodesia Tobacco Association in collaboration to subsidise for two seasons the spraying of approximately 1,000 acres of tobacco by Messrs. Pest Control (C.A.) Ltd., using modern high pressure mechanised equipment. Most of the principal tobacco growing districts of the Colony are included in the scheme and growers have agreed to pay according to results obtained.

The very erratic planting season and the lateness of the rains have created a number of difficulties but the scheme has been put into operation and arrangements made for assessing the results.

Early reports of severe damage to plants by the spraying machinery have been shown to be unfounded, whilst severe "scorching", attributed by some growers to fungicide injury, was caused by mosaic necrosis.

SEED POTATO PRODUCTION:

Owing to changes in the administration of Rhodes Inyanga Estate, the experiments which have been conducted by this Branch since 1940 on seed potato production have now been terminated.

The final crop, which was sixth-from-imported, was quite satisfactory, there being no fall-off in quality or yield. Systematic rogueing and mass selection over seven years reduced the number of wildings and bolters to negligible proportions, whilst selection for resistance to early blight (Alternaria solani) gave encouraging results.

All types of severe mosiac and leaf roll appeared to have been eliminated and except for virus X, which is normally carried by the Up-to-date variety, the crop appeared to be virus-free. The fact that no infestation by virus-carrying aphids has occurred during any year that the crop has been grown at Inyanga may account for this satisfactory position.

Check random samples of the seed were grown at the laboratory in Salisbury as in previous years and no virus other than X was detected.

A row to row trial of field graded seed from Inyanga against first-from-imported Scotch seed was conducted by the Manager, Salisbury Experimental Station and no significant difference was detected in yield or quality of the tubers or in incidence of disease.

B O T A N Y.

S Y S T E M A T I C.

1814 determinations were made and many interesting and important specimens added to the Herbarium, which was transferred to a converted army hut early in the year. The improved facilities were reflected in the

/increased.....

increased amount of detailed work accomplished. Most of the accumulated material of the past has now been named and jacketed.

Herbarium and literature indexes have been brought up-to-date and a card index of references to every known species of flowering plant recorded from Southern Rhodesia has been completed by Dr. Wild. The library has also received attention and a simplified system of filing reprints put into operation.

Personal contacts have been made with the Royal Botanic Gardens, Kew; the National Herbarium, Pretoria, and the National Botanic Gardens, Kirstenbosch, for exchanges and assistance in naming species. Correspondence has passed with other herbaria and also with the American Museum of Natural History Expedition in Nyasaland in regard to the acquisition of duplicate material.

Miss Sturgeon has continued her studies of special groups in the Herbarium which were in a state of confused synonomy, and the material is being steadily sorted out.

Dr. H. B. Christian has kindly supplied sets of authentic species of Encephalartos and Aloe for the Herbarium. The number of collectors who send in material regularly has increased so that a wider range of plants is received than could be collected by the present staff. Their interest is greatly welcomed. Among those who have contributed the largest number are the pupils of Queen Elizabeth School, Mrs. and Mr. Hornby, of Hartley, Mr. N. C. Chase of Umtali, Mr. F. Greatrex of Salisbury, Mrs. H. Faulkner of Hocuba, P.E.A., Miss N. Hall (Cape plants) and Mrs. P. Lewis of Marandellas.

BOTANICAL EXPEDITION:

A party led by the Senior Plant Pathologist and including Dr. Wild and Miss Sturgeon from this Branch, Mr. Hardy, Forest Officer, and Mr. J. M. Rattray, Pasture Research Officer, spent two weeks in camp at the foot of Mt. Inyangani on the Eastern border. The principle objects were to collect the more inconspicuous plants of the highlands, which are poorly represented both in this and in the larger African and cosmopolitan herbaria, to study aquatic plants in relation to the food of trout with which many of the streams are, or will be, stocked, to collect plants likely to be of value in pastures and to check records of the tree of the district.

A considerable area of the country was explored and much useful material collected, which provided many new records for the Colony. 28 species have already been named, including three members of the Primulac an order previously unknown in S. Rhodesia except for one record by C.M. Swynnerton in 1911. Special attention was given to the various ecologi factors governing the distribution of the plants collected. Duplicator are being prepared for distribution to other herbaria.

BOTANIC GARDENS:

What may prove to be an historic step was taken this year when the Salisbury City Council agreed to transfer to the Government the area known as Alexandra Park for development as a National Botanic Garden.

The whole scheme, as approved in principle by the Government, comprises a National Herbarium with attached laboratories of plant pathology and seed analysis, adjacent to botanic gardens containing all possible representatives of the flora of S. Rhodesia and adjoining territories. The area is 170 acres in extent and rises from level ground through gently undulating slopes to a rocky kopje some 150 feet higher. The whole has been protected since the days of early settlement and is representative of virgin Brachystegia savannah.

Mr. H. B. Christian has offered to duplicate, as far as possible, his unique collection of Aloe species as a nucleus for the garden, which offers a natural setting for these plants.

Negotiations for the transfer of the land are in progress and arrangements are being made to commence preliminary work in the 1947/48 financial year.

E C O N O M I C.

NOXIOUS WEEDS:

A conference of officials concerned with the suppression of noxious weeds was held in October when it was agreed to modify the existing schedule of proclaimed weeds, which is largely based on legislation in force in the Union. It was considered that certain species had not proved to be noxious in S. Rhodesia, whilst in the case of the Upright Starbur (Acanthospermum hispidum DC.), satisfactory methods of eradication over large areas were unknown and in certain circumstances, such as the prevention of erosion, the weed was regarded in some quarters as beneficial. It was agreed that the policy for the future would be to proclaim only such weeds as were noxious and whose eradication could be enforced legally, and that the Burweed, Cocklebur, Upright and Prostrate Starbur, and Mexican Poppy be deproclaimed.

At the same conference a sub-committee was appointed to investigate the control of Upright Starbur by ecological methods, particularly in the native areas. A programme has been drawn up to commence in 1947.

No serious new infestations of water hyacinth have been reported, and the weed has been kept under strict control in the Makabusi river, where seedlings continue to appear. The weed is still present in the Prince Edward Dam. Successful destruction of water hyacinth by root penetrating sprays has been demonstrated.

Lantana camara and Solanum aculeastrum, both serious in the Eastern Districts, have been eliminated in experimental areas by the use of diesel oil and sodium chlorate.

/Poisonous.....

POISONOUS PLANTS:

Dr. Wild has continued his study of species of Senecio and has identified as S. scelcratus Schwick. that which occurs commonly in the Eastern Districts and is reputed to be the cause of death of many head of stock annually. It is one of the most poisonous species of the genus. This determination has been confirmed by Miss Verdoorn at the National Herbarium, Pretoria. The control of this weed depends on pastoral metho and is outside the scope of the duties of this Branch. Details of the work so far accomplished are being prepared for publication at an early date.

A competition for the collection of poisonous plants from the Marandellas district was organised by Mr. W.F. Collins, who offered substantial prizes for the best collections. The Botany Branch assisted with the work. As a result, a further competition embracing the whole of the Colony has been started by Mr. Collins.

Gifblaar, (Dichapetalum cymosum (Hook) Eyl.) eradication has been attempted on the farm of Mr. Alan Tredgold near Bulawayo by the use of a copper sulphate and calcium chloride mixture, as advocated by Dr. Leeman in the Union. Some degree of success has been obtained but the plant has such an extensive root system that destruction is very slow. Dr. Wild discussed the problem with Dr. Leeman whilst in Pretoria, and fu experiments are planned.

OTHER WEEDS:

Euphorbia inaequilatera Sond., the common Blue weed of lawns, has caused much trouble on golf course greens for some time past. Hand weeding failed to keep down the pest, so that experiments were carried out at the Royal Salisbury Golf Club using DNOC as a spray. This proved affective at 1.0 p e r cent. concentration and improved the grass as well when applied several times at intervals of a few weeks. The weed is very persistent and the greens are constantly reinfested by seed introduced on the shoes of players.

The flowering parasites, Striga orobanchoides Benth., became serious on tobacco in the Featherstone district where it was reported to be causing damage similar to that due to eelworm. The outbreak was investigated and some alternate hosts of the parasite were discovered, including tomato (sown as a trap crop), Tephrosia godmani Bak. f., and Indigofera confusa Prain. Tests of various other plants are being made in an attempt to discover a suitable trap crop to eradicate t weed. Meanwhile, the tobacco growers concerned report satisfactory control by hand hoeing.

BOTANICAL SURVEY:

A botanical survey was commenced on the farm K.34 in the Karoi Block as a compliment to the soil and timber surveys made this year.

GERMINATION TESTS:

A number of tests of tobacco seed were acarried out. All wer satisfactory.

/PUBLICATIONS.....

PUBLICATIONS.

In the Rhodesia Agricultural Journal:-

1. Plant Diseases : Instructions for Collecting and dispatching Specimens. Jan.-Feb.

2. Notes on Alternaria (Brown) Leaf Spot of Tobacco by J.C.F. Hopkins. Mar.-Apr.

3. Report of the Branch of Plant Pathology & Botany. Jul.-Aug.

4. Upright Starbur (Acanthospermum hispidum DC.) A New Method of Control, by H. Wild. Nov.-Dec.

In Vuka.

5. An Important Parasite of Tobacco Crops, by H. Wild, May.

Several topical articles were also sent to the Press.

GENERAL.

Thanks are due to the National Herbarium, Pretoria, the Royal Botanic Gardens, Kew, and the Imperial Mycological Institute for assistance in naming specimens and for technical advice, and to the Lunds Botaniske Museum, Sweden, for a generous donation of literature on Rhodesian plants.

Herbarium facilities were afforded to other botanists, including Mr. F. Greatrex, the orchid specialist, Mr. H.B. Christian, the authority on African Aloes, Snr., Gomez Pedro, of the Portuguese Government in Lourenco Marques, and Dr. Beryl Fisher, of Natal University College.

Among other visitors of note were Sir Ian Heilbron, Sir Guy Marshall, Dr. J. L. Simonsen, Dr. B.F.J. Schonland and Dr. W.L. Ripper.

The Senior Plant Pathologist continued to serve as an ex officio member of the executive committee of the Seed Maize Association, and as a member of the Divisional Conservation Committee and the Plant Regulatory Board.

Exhibits of plant pathological and botanical interest were placed on the Salisbury Agricultural Show and the Senior Plant Pathologist acted as a judge in the maize classes.

(SGD.) J.C.F. HOPKINS.

SENIOR PLANT PATHOLOGIST.